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Pod Nursing on a Medical/Surgical Unit: Implementation and Outcomes Evaluation

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Abstract

A medical/surgical unit at the University of Michigan Health System implemented a pod nursing model of care to improve efficiency and patient and staff satisfaction. One centralized station was replaced with 4 satellites and supplies were relocated next to patient rooms. Patients were assigned to 2 nurses who worked as partners. Three patient (satisfaction, call lights, and falls) and nurse (satisfaction and overtime) outcomes improved after implementation. Efforts should be focused on addressing patient acuity imbalances across assignments and strengthening communication among the health care team. Studies are needed to test the model in larger and more diverse settings.

Inpatient medical units are challenged to give high-quality nursing care to complex patients in a stressful environment. The Institute of Medicine report *The Future of Nursing: Leading Change, Advancing Health* (1) recommends that nurses serve as key contributors in the redesign of clinical care delivery to improve patient outcomes. Comparative studies suggest that practice environments are poorer, burnout is higher, and job satisfaction is lower on medical/surgical units than in specialty settings (2,3). Health care leaders are challenged to develop and sustain environments that are conducive to evidence-based care delivery and capable of restoring joy in work (4).

The model of nursing practice at the University of Michigan Health System (UMHS) stresses 3 inter-related components: patient-centered, evidence-based, and outcome-focused. Scores on patient satisfaction and employee engagement surveys conducted by the institution were also low. During a series of structured meetings facilitated by external consultants, nursing staff on a medical unit identified that the existing nursing care delivery model (CDM) was ineffective and had many non-value added processes. The standard approach to patient assignments did not consider the geographic location of patients. Charge nurses assigned patients based on clinical acuity without formal input from clinical nurses. As a result, patient assignments frequently split the hallway geographically and nurses perceived that care was delivered inefficiently. Staff members had decreased direct patient care time due to the distances across rooms.

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Recent evidence suggests that reorganized CDMs with team-based assignments versus individual patient assignments result in favorable nurse and patient outcomes (5). As part of 1 institution's involvement in the Transforming Care at the Bedside Initiative (6), Donahue (7) reported 1 unit's experience with pod nursing (PN) implementation, with a focus on increased proximity between patients and nurses. Pod nursing is defined by two key characteristics: a division of one nursing unit into a number of substations with geographic proximity to patients; and patient assignments that specify a pair of nurses to deliver care in a team-based approach (7). Nurses participating in PN report increased time spent on value-added care and direct patient care after this CDM implementation (7). Patient satisfaction scores were reported to improve and were sustained after implementation (7). In 2010, Fairbrother and colleagues reported improved nurse satisfaction and retention when nursing units utilized a team-based approach to nursing care as opposed to individual patient assignments (8).

As part of a unit-based quality improvement initiative to strengthen evidence-based practice (EBP), the nursing staff on the selected unit at UMHS sought to design and evaluate a nursing CDM to improve efficiency. The nursing unit leadership, comprised of the nurse manager, the clinical nurse specialist, and the nursing supervisor, partnered with staff nurses in reviewing the literature to establish a standard for a new CDM. The team identified several outcomes of importance to their current practices: improved patient satisfaction, lower fall rates, and improved nurse satisfaction (2, 5, 7). These outcomes were routinely measured as part of the institution's quarterly nursing care excellence initiative. The nursing staff identified secondary outcomes of interest, including decreased frequency of call lights, improved team work and communication, patient assignments that were more balanced, and reduced use of overtime to complete patient care. These data were not routinely collected as part of the institution's nursing excellence initiative and required primary data collection.

The participating nursing unit is a 32-bed medical surgical unit. At the time of the pilot, the unit had 42 full-time equivalent registered nurses, 12 nursing assistants, one nursing supervisor, one educational nurse coordinator, one clinical nurse specialist (split across 2 units) and one nurse manager. The unit delivered approximately 10,000 patient days of care during the study period. The most frequent admission diagnoses were diabetes, pneumonia, renal failure, and cancer.

Methods

This quality improvement project conceptual plan entailed both a physical and process redesign of the existing nursing unit coupled with an outcomes evaluation. Both staff and patient outcomes were collected for evaluation (Table 1). The institutional review board determined the project did not require human subject approval.

Pod Nursing Design and Implementation

Pod nursing was implemented during the month of November 2008. The existing design of the unit consisted of 16 rooms along the outer sides of 2 hallways with nurse servers outside each room. In the middle, separating the hallways, there is a central clerk/nursing station, medication room, supply room and at each hallway's end there are two satellites with two computers. No major renovation was needed, as the existing satellite locations and supply closets outside each room were the basis for the pods. Each pod contained items necessary for patient care and dedicated desk space for documentation and communication. Nurses and medical assistants devised a list of supplies frequently used for patient care to stock in the existing (but under-utilized) storage units. The unit was divided into 4 pods. Each pod was comprised of 8 patients in the same area. Two nurses who work as partners were assigned to each pod. Nurses' names appear on white boards at each satellite to enable other staff to

quickly identify the nurse caring for patients in that pod. Nurses' pictures are placed on main locator white boards on both major hallways. Pod partners worked together, fostering teamwork. Pod partners were expected to answer all call lights in their assigned pod to address patient needs promptly. After charge nurses assign nurse teams to pods, the nurse team members selected his or her individual patients within the pod. This was performed at each shift change. A standardized inventory of patient care supplies was located in storage closets adjacent to each patient room, replenished daily by nursing assistants from the main supply room. To facilitate documentation and communication, each pod had 2 computer workstations and a telephone. A staff nurse from the unit composed a case study (supplemental digital content #1) to describe the change from her point of view. The following unit characteristics did not change during the pilot project: all nurses and nursing assistants carried pagers to receive patient calls and alphanumeric pages from hospital staff; the unit was staffed with a clerk to answer telephone calls, process selected orders, and facilitate admissions, discharges, and transfers, and; nursing assistants were assigned using existing criteria (e.g., balancing number of patients who needed complete assistance with activities of daily living).

Data Collection and Analysis

The project examined both patient and staff outcomes. Three patient outcomes - satisfaction, call light use and total falls - were collected monthly between July 2008 and May 2009 (Figures 1, 2, 3). The Press-GaneyTM patient satisfaction survey was administered at random to approximately two-thirds of discharged patients on a monthly basis (9). The primary patient outcome for the pilot was satisfaction with nursing care, as measured by Press-Ganey's patient satisfaction index for overall nursing care (Figure 1). This index is scored on 0–100 scale, with higher scores indicating higher satisfaction. Monthly scores and a 12-month moving average were reported. A 2nd patient outcome was the total number of all call lights recorded by the system per month, which was downloaded from the unit's nurse call system (Figure 2) The total number of monthly call lights served as a proxy measure for unmet patient care needs. The 3rd patient outcome considered was all patient falls (with or without injury) (Figure 3). Monthly falls data (defined as number of falls reported per month per 1,000 patient days) were obtained from the institution's incident reporting system. For call lights (Figure 2) and falls (Figure 3), a linear trend was calculated to identify overall outcome patterns over the study period.

The two nurse outcomes examined were: satisfaction with PN and use of overtime to complete patient care. Nursing satisfaction was measured with a 5-item paper questionnaire developed by the project team and distributed to 48 staff nurses in March 2009 (Table 2). 19 (39.5%) of nurses completed a survey to assess the extent of their agreement with the following 5 questions: 1) has PN improved your communication with physicians; 2) has PN improved communication with nursing assistants; 3) are you able to answer your patients' call lights more efficiently; 4) do you feel PN should remain the nursing model on the unit, and; 5) is unbalanced patient acuity across assignments an issue with PN? Respondents answered from a 5-point Likert scale where 1= strongly disagree and 5 = strongly agree.

Results

Patient Outcomes

Figures 1–3 show the patient outcomes before, during, and after PN implementation. Over the study period, the 12-month moving average of the index of overall nursing satisfaction increased from 84.8 to 86.4 (Figure 1). The number of call lights per month decreased over the study period, with a peak of 8,049 calls in August 2008 and a low of 2,096 calls in November 2008 (Figure 2). In March 2009, 6,839 calls were reported (data were not

available for April and May due to technical difficulties). The monthly call average was 7956 and 7189 before and after Pod implementation, respectively. The monthly fall rate averaged 4.8 and 3.7 falls per 1,000 patient days before and after implementation, respectively (Figure 3). A linear trendline shows that call lights and total falls decreased over the study period. No other specific fall prevention initiatives were implemented at this time, other than the institution's standard fall prevention procedures.

Nurse Outcomes

Of the 48 nurses who received the questionnaire, 19 (39.6%) responded (Table 2). Responses are collapsed into the number (%) who agreed/strongly agreed with the statement versus respondents who were neutral, disagreed, or strongly disagreed with the statement. Thirty two percent of respondents reported that Pn improved their communication with physicians and nursing assistants. The majority (84.2%; n=16) agreed or strongly agreed that acuity is a lingering concern with PN care, and 78.9% (n=15) reported increased efficiency in call light response. While the majority of respondents (68.4%; n=16) agreed PN should remain the CDM, 31.6% (n=6) were neutral or disagreed. Upon examination of the linear trend, incremental overtime decreased over the project period (Figure 4). The monthly incremental overtime was 1,350 and 1,168 minutes before and after Pod implementation, respectively.

Discussion

Dividing the unit into 4 pods improved the workflow for the nursing staff. With this redesign, nurses work as teams instead of isolated individuals. Nurses can depend on their pod partners to care for their assigned patients when they are on break or must devote attention to a specific patient. After the pilot, nurses' assignments are not spread throughout the length of the entire hall or split between both halls. Staff reported increased efficiency with PN, largely through the reduction of excessive walking. Although there may be times when patient acuity is not balanced across pods, the majority of respondents were satisfied (n=13, 68.4%). Charge nurses can focus their attention and assistive efforts to pods with higher acuity. Patients also benefited from PN because staff members were more visible and available at each pod than in the prior unit design. Because pod partners shared pertinent information about their patients, nurses reported feeling more informed and could assist each other more effectively in both routine and emergency situations.

Motivated to improve the quality of patient care delivery and optimize nursing satisfaction and efficiency, implementation of a PN model on a medical unit in an academic health center resulted in improved selected patient and nurse outcomes. Compared with data collected before implementation, patient satisfaction increased and the number of call lights, fall rates, and nursing overtime decreased after PN implementation (Figures 1, 2 and 3). Continued evaluation of these outcomes is warranted to assess durability of response over time. The majority of surveyed nurses reported increased efficiency in call light and response and endorsed the revised CDM. Relocation of nurses in closer proximity to patients has been shown by others to improve patient satisfaction (7). Improved quantity and quality of patient-nurse interactions have been reported (10). Nurse managers have also reported benefits of shifting to team-based models of care in recent years (11). The project reported here couples patient-nurse proximity with a team-based patient assignment to increase the number of clinicians available to assist patients, families, and health care team members. While the results reported are generally favorable, staff nurses did not endorse improved communication as an outcome of the new CDM. We have engaged in additional research projects to strengthen teamwork and communication, based on the new model. In addition, nurses reported imbalances in patient acuity as a lingering concern. Specifically, due to fluctuating admissions and bed assignment procedures, certain pods may house more

complicated patients than others. This poses the dilemma of geographic proximity versus disproportionate acuity across assigned staff. These 2 areas are the focus of continued quality improvement efforts at the organization. We have begun to work with our admissions department on ways to identify acuity at the time of admission or submission of a request for patient transfer, so patient assignments can be balanced across the pods upon admission to the unit. From early reports, it is likely that multi-faceted interventions will be necessary to address these concerns.

Limitations

Our project is observational in nature, as we could not conduct an experimental design with comparison units. A relatively small sample size prohibits analyses using inferential statistics. There may be differences in patient acuity or staff nurse characteristics that may influence our outcome rates in ways that cannot be measured or incorporated into the reported results. Low response to the nursing survey may have biased our results, as non-responders may differ in their opinions of PN. We cannot exclude census fluctuations as an explanation for our results, the 12-month moving averages and trendlines observed for satisfaction, call lights, and falls, suggest improved outcomes. A comparison of outcomes in a sample of units that did not implement PN would identify whether the improved outcomes observed are merely temporal or truly associated with PN. The outcomes need to be validated and the pilot replicated on other units within the organization and beyond. The perspective of other important stakeholders in the project, including family members, physician colleagues, and medical assistants, were not recorded, but are worthy of continued investigation.

Implications for Practice, Policy, and Leadership

The results suggest that reorganization of a medical unit into a pod model was effective at improving selected patient and nurse outcomes. A unique aspect of the project was physical relocation and process changes to the unit's CDM. Continued evaluation will be important to assess change over time and identify opportunities for improvement. Our approach can be used as a framework for designing and evaluating CDM changes in similar nursing units. Attention to both patient and staff outcomes will result in meaningful improvements to patient care units that support evidence-based practice and care delivery that is safe, effective, and patient-centered.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Figure 1.
Satisfaction with Nursing Care during the Project Period

Figure 2.
Patient Call Lights Recorded during the Project Period

Figure 3.
Total Falls per 1,000 Patient Days during the Project Period

Incremental Nursing Overtime during the Project Period

Figure 4.
Incremental Nursing Overtime during the Project Period

Table 1

Outcomes Evaluated.

Patient Outcomes	Measure
Satisfaction	Press-Ganey™ Overall Nursing Care Index (0–100)
Call Lights	Total number of patient calls recorded by the call light system on a monthly basis
Falls	Falls with or without injury per 1,000 patient days, collected by the institution's risk management system
Nurse Outcomes	
Satisfaction	5-item questionnaire to assess satisfaction with pod nursing
Overtime	Incremental overtime reported to human resources on a monthly basis

Table 2

Nursing satisfaction with pod nursing implementation (n=19).

	Strongly Disagree, Disagree, or Neutral n(%)	Agree or Strongly Agree
Improved communication with physicians	13 (68.4)	6 (31.6)
Improved communication with nursing assistants	13 (68.4)	6 (31.6)
Able to answer patient call lights more efficiently	4 (21.1)	15 (78.9)
Pod nursing should remain the unit's model of care	6 (31.6)	13 (68.4)
Patient acuity is an issue with pod nursing	3 (15.8)	16 (84.2)